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## ACUTA eNews June 1999, Vol.28, No. 6

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# ACUTA

# News

ADDRESSING VOICE, DATA, AND VIDEO COMMUNICATIONS NEEDS FOR HIGHER EDUCATION

June 1999



## From the President

**Buck Bayliff**  
Wake Forest University

*Buck Bayliff*

Watch out for great ideas!

If you think great ideas only come to those who are privileged or gifted in some way and you are no Bill Gates, Thomas Edison, or Albert Einstein, read on. Great ideas can happen to anyone, and there is something more important than gift or privilege.

In 1960 J. B. Lippincott published a book by an unknown, unpublished author from a small town in Alabama. This work sold more than two and a half million copies in the first year and has since been published in more than 30 languages. Harper Lee won a Pulitzer Prize for her first—and only—novel, *To Kill a Mockingbird*.

Another author worked as an insurance broker even as he dreamed of writing a novel. His first work was considered too technical, too detailed, too tedious by more than a dozen publishers, but eventually a small press bought it, and Tom Clancy's *Hunt for Red October* soared to the top.

At the beginning of this decade, several army buddies who were stationed in Israel began to share some technology ideas as they vented their frustration with long-distance charges. At about \$3 per minute, calls to friends back in the States were a luxury they couldn't often afford. The outcome of their collaboration changed the path of telecommunications history. IP telephony will no doubt be one of the

*Continued on page 5*

## Winners Announced in Student Papers Contest

Congratulations to the winners of the third annual ACUTA Student Papers Competition. The three winners will each receive an all-expenses-paid trip to Nashville for the ACUTA Conference in July, a plaque or trophy, and cash prizes of \$1,000, \$500, or \$250.

In addition, all papers will be published on the ACUTA Web site and will be considered for publication in the *ACUTA Journal*.

We commend all those who entered this year's competition and encourage members who plan to attend the conference to congratulate our students and make them feel welcome.

### 1st Place

*H.323 Videoconferencing Over LAN/IP*  
Saurabh Singhal, Univ. of Houston

### 2nd Place

*The Technology for Delivering On-Demand Training*  
Cleon Wellington, Ball State Univ.

### 3rd Place

*International Telecommunications Alliances*  
Monika Adamska, McGill Univ.

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## Conference Offers Many Choices

We hope you're planning to attend ACUTA's 28th Annual Conference at the extraordinary Opryland Hotel and Convention Center in Nashville. We're sure you'll be impressed with the exciting schedule of fifty different breakout sessions that the Program Committee has put together for this year's event.

There will be several presentations addressing VoIP by campus IT managers, consultants, and corporate presenters. You can also hone your leadership and communication skills in three of the sessions in the professional development track. In the legislative and regulatory arena, you can learn about local number portability, slamming, the new copyright law,

access charges, and E911. Some of the other hot topics include wireless, call centers, privatization, rate setting, customer service, and much more.

Now's the time to sign up someone from your campus—or yourself—for one of the pre-conference sessions on Wireless, Auditing, Disaster Planning or the Introduction to Telecom and Data Networking.

Also, be sure to plan your travel to stay for the final sessions on Thursday which are guaranteed to be excellent! If you haven't registered yet, please check out the conference Website at <http://www.acuta.org/html/nashville.html>.

See you in Nashville!

**You Could  
Be a Winner!  
See page 3**



## Dues Notices Mailed

Dues notices for 1999–2000 were mailed April 30 with payment due July 1. ACUTA membership continues to increase in value, with benefits such as legislative and regulatory updates, participation in the listserve, discounts on registration fees, the monthly newsletter and quarterly journal, and a growing professional network.

Please check the information shown on your dues notice carefully, making corrections before returning it with your payment. Since information from the dues notice is used to compile the Membership Directory, it is especially important that any corrections or changes be made.

If your fiscal year requires you to wait until after July 1 to make payment, just contact Eleanor Smith at 606/278-3338 ext. 23 or [esmith@acuta.org](mailto:esmith@acuta.org). Remember that ACUTA now accepts Visa, MasterCard, and American Express.

## ACUTA NEWS, Vol. 28, No. 6

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## Unifying Networks:

*Peter Haverlock, Nortel Networks*

Traditionally, voice and data networks have been like oil and water—they didn't mix. However, many colleges now offer traditional services along with the most advanced data networking resulting in a communications service that is, for the most part, a far cry from what we knew a generation ago.

The first electronic network, the telegraph, was a data network which used Morse code protocol. Analog telephones replaced the telegraph, providing end-to-end, real-time delivery. The carbon elements in the handset limited the frequency response, leading to the standardization of one voice channel being 4,000 Hertz. Sending an analog signal over any distance was troublesome due to the distortion introduced by analog amplifiers. By the early '60s the core of the PSTN was being converted to digital transport using a basic channel of 64,000 bps. This structure limits the flexibility of what can be done to transport data over a network configured for voice applications.

Today, data is overtaking voice as the predominate information being transported over WANs, including the PSTN. The PSTN voice/data network is a connection network using intelligence in the network—not in the telephone handset. The flow of information requires that resources (bandwidth) be allocated; however, this allocated bandwidth cannot be shared among users.

The Internet, on the other hand, can be seen as a stupid network with the intelligence residing in the computer end stations. There is limited intelligence in the routers and domain name servers. Bandwidth is shared among multiple users and applications.

### Case in Point: NIU

The mission of Northern Illinois University in Dekalb calls for every student to be employable and productive upon graduation. To achieve this, NIU strives to provide an environment where state-of-the-art technology surrounds students.

"Our students don't just take classes in technology, they use it every day in their class work as well as for research and communication. We want our graduates to be proficient with the technical tools they will use in the business world," says

Walter Czerniak, director of computer and telecommunications. NIU has installed high-speed modem access to a Sonet backbone and is currently investigating merging its voice and data networks.

### Technology in the Real World

With the explosion of the Internet and the Web, the financial clout of an estimated 147 million Web users (in 1999) creates a new economic market arena. The Internet protocol (IP) underlying the Web is very straightforward—universal access to applications is just a few clicks away.

The reasons for the high degree of acceptance of IP and the Web include innovation in new applications, an open application program interface, and the ability to transport information over any media. Voice-over-IP is a good example of the new applications. A voice conversation using the G.729 voice algorithm standard at 8,000-bps compression can generate from 100 to zero packets per second, with a packet size of about 27 bytes or greater depending on blocking. The zero packet rates are achieved when silence suppression is invoked. The use of packets allows for the efficient sharing of bandwidth. It also provides the means to deliver frequency responses greater than 4,000 Hertz. To many people, IP appears to simplify networking by allowing the use of any media and any application, with worldwide connectivity over the Internet. However, before you offer a packet network to the university, be sure to account for a wide variety of performance variables: latency; packet jitter, router hops, discarded packets, and congestion from other shared users (data rubbernecking).

### Achieving Network Happiness

There are three requirements to achieve network happiness:

- **High availability:** Availability consists of reliability plus the service time needed to correct any downtime. If the network is not available, users will find other, less efficient means of transport to accomplish their needs.

In order to provide high availability, there must be a monitoring and reporting structure in place in the network. This metric view of their network will allow network managers to make adjustments over time to minimize network traffic conflicts, thus boosting availability. In the core of the



# Does It Make Sense?

PSTN or Internet, the use of optical rings makes it possible if there is a failure to get an alternate path in only 50 milliseconds.

- **Consistent performance:** This is not to be confused with *fast* performance. Certain real-time applications require instant performance. For others, such as e-mail with attachments, reaching the recipient may acceptably take a few minutes. Telecom managers must monitor traffic flows and performance variance in order to keep users satisfied and to know where to spend money for network resource relocations.

- **Price/Value:** The third requirement is an agreed-upon level of price/value of the infrastructure needed to support high availability and consistent performance. When you spend money on the network, you want the major availability and performance improvements to be in mission-critical applications.

The Web is creating a digital economy (also called e-commerce) that is global in nature. The Internet provides transport for graphic information and real time voice and video. This is creating economic pressures to provide information transport at growing levels of efficiency. Since the Internet is open to many different users, you must address security of data flows. This should be done through a stated security policy and data encryption. Data packet networks (like IP and frame relay) provide high efficiency through resource sharing, while connection networks (IBM Systems Network Architecture [SNA], ATM, and voice-over-PSTN) give the highest degree of control. The question is how to find a balance that can provide the best of both worlds. For example, a user may be sending and receiving IP packets, but in the core of the service provider's backbone network, the IP packets may be flowing over an ATM infrastructure. This provides the flexibility of IP with the control of an ATM connection. Major players, including AT&T, MCI WorldCom, and Qwest, are providing many IP offerings.

The voice network is mature and has many features that provide high degrees of availability. In the core of the public and private networks, both voice and data travel over the same media but may use different protocols. The engineering knowledge to support high availability is

now starting to be migrated to the edge of data networks. Consistent performance is a very complex issue for shared packet networks.

There are two ways to control congestion on TCP/IP networks: (1) increase resources (bandwidth/router performance); (2) reduce demand. In the LAN environment, multiple technologies and configuration changes can provide more unrestricted bandwidth at reasonable cost. Technology examples are ATM, fast and Gigabit Ethernet, and Layer 2 and Layer 3 switches. The optical network core with dense wave division multiplexing has created an explosive increase in bandwidth in the WAN. But this is not yet the case at the edge of the core network. Think of a WAN as a series of LANs connected with money. Any increase in bandwidth invokes a recurring monthly cost. The use of QoS features helps to reduce demand by giving one class of data priority over other classes or by delaying the entry of data into the network. Your network, like the roadway system of a city, grows with new and improved roads (bandwidth/routing switches) and a traffic control system (QoS) for dynamic adjustments of flows.

One school district in the midwest realized that the growth of their data traffic would very quickly outpace their voice traffic. They also expected to be using more video in the classrooms, requiring high-speed access to dial-up video instruction and the Internet. They plan to install a device that takes all their voice off their PBX and merges it with LAN traffic. This consolidated traffic is then compressed into small, multimedia packets which can be transmitted over a frame-relay or ATM network. Instead of paying for separate voice, data, and video networks, the district optimizes their bandwidth in one, powerful multimedia network.

New technologies are making the unification of voice and data networks an economic necessity. Not limited to IP, the unified network must provide seamless access to information for business and personal needs. While stress may be a byproduct of change brought about by technology, a unified network will provide efficiency and flexibility in a competitive marketplace.

Reach Pete at [pnaverlo@nortelnetworks.com](mailto:pnaverlo@nortelnetworks.com).

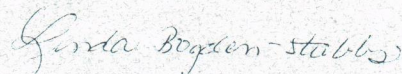
## Board Report

May

The Board of Directors met by conference call on May 6, 1999. The following are highlights of that call:

- The final review for the Institutional Excellence Awards was completed. Winners in Category 1 and Category 2 were identified and will be announced at the Annual Conference.
- Submissions for the Student Papers Award have been reviewed and three winners selected. Winners will be recognized at the annual conference.
- The program for the annual conference is just about finalized. Volunteers for moderators and monitors are needed.
- The Board voted to raise the membership dues for the fiscal year 2000-2001 to cover the additional cost of legal services to assist the organization in monitoring and making our position known on key regulatory/legislative issues affecting our membership. The dollar impact for these increases per institution will be minimal, and they will not go into effect until May 1, 2000.

Respectfully Submitted,



Linda Bogden-Stubbs  
SUNY Health Science Center  
ACUTA Secretary/Treasurer

## Win a Great Prize!

Want an HP OfficeJet Printer/Scanner/Copier/Fax? It's the conference doorprize you can qualify to win whether you attend the conference or not!

Exhibitors at ACUTA events donate funds which are used to purchase some terrific exhibit hall doorprizes. The catch: You must be present to win.

But again this year we're offering a doorprize just for "touring" our virtual exhibit hall at [www.acuta.org/html/nash99e&s.html](http://www.acuta.org/html/nash99e&s.html) and completing an entry form online.

You do not have to attend the conference to win, but your school must be an ACUTA member.

Entry deadline is Wednesday, July 7. The winner will be announced online and at the conference on Monday, July 19.



## Share Your Expertise

Looking for a volunteer project suitable for your whole telecom department? TECH CORPS® is a national nonprofit organization established in October 1995 and dedicated to improving K-12 education by helping educators effectively use technology in their schools. It was founded by Gary Beach, senior vice president of International Data Group, who envisioned an organization which would help build a technology infrastructure for America's schools much like the Peace Corps helps build an infrastructure in developing countries.

TECH CORPS volunteers conduct teacher training seminars, mentor students and staff, repair and install computers, participate on technology planning teams, assist teachers with the integration of technology into the curriculum, and support a wide variety of other local technology activities. Currently, 42 states and the District of Columbia have TECH CORPS chapters.

To learn more about TECH CORPS, visit the Web site at <http://www.techcorps.org>.



## Spotlight

Welcome to one of ACUTA's newest Corporate Affiliate members:

**Genesis Cable Systems, L.L.C.**, operates a leading edge domestic wire and cable manufacturing facility which employs the latest generation of equipment technology to produce cables of the highest quality: Cat 3, Cat 5 & Enhanced Cat 5 cables for voice and data; coaxial cables for video; fire alarm and security cables; and more. *John Pryma, 800/222-0060*

## ACUTA Representatives Meet with FCC and FTC in Washington

The week of May 18 was a busy one for your ACUTA representatives, who met with officials from the Federal Communications Commission and Federal Trade Commission in Washington.

Anthony Mordosky from Bradley University (President-Elect), Anthony Tanzi from Brown University (Legislative/

## From ACUTA

### Headquarters

Jeri A. Semer, CAE  
Executive Director



Regulatory Affairs Committee Chair), and I participated in various meetings with the FCC on Calling Party Pays (CPP) cellular issues, and with the FTC on new rules designed to curb unauthorized charges appearing on telephone bills.

ACUTA was invited by the Ad Hoc Telecommunications Users Committee to participate in a series of six meetings on CPP with FCC Commissioners and key staff. The meetings were designed to educate these officials about the implications of CPP for PBX owners including large institutional users. In case you haven't heard about it, CPP means just what the name says—the calling party is responsible for airtime charges, rather than the owner of the cellular phone. If the calling number is determined through ANI or some other type of caller ID, it is likely that the university's main number or trunk line will be charged for the call, regardless of the extension behind the PBX from which the call was placed.

Our message can be summarized as follows: Higher education is embracing the use of cellular technologies, and campuses are utilizing cellular for voice and increasingly for data applications. However, because of the risk of substantial financial liability for CPP charges, a technological solution must be developed that will allow PBXs to automatically recognize and properly account for CPP calls.

The options that we presented to the FCC were either to assign distinctive numbers to CPP phones or to require special electronic signaling when calls are placed to CPP phones. Our research revealed that none of the major switch vendor have developed the software/hardware solutions that would make signaling a viable option at this time (and such a solution, while it may be feasible, would require major switch upgrades at a significant cost). Therefore, a distinctive number pattern would be the easiest and most cost-effective method of identifying these calls. We recommended that they be assigned a special service access code (SAC), which would make it relatively simple for PBX owners to program their PBXs to block all CPP calls if desired. In countries outside the U.S. where CPP is the standard for cellular calls, this is the solution that is used.

We asked the FCC to delay adoption of CPP pending a resolution of these issues and the availability of technical solutions to protect institutions from incurring the cost of CPP calls placed from extensions behind their PBXs. In addition, we urged the FCC to require carriers to provide meaningful notice at the time that consumers call a CPP phone, to inform them that they will be responsible for airtime costs, including specific rate information. The FCC may be issuing a Notice of Proposed Rulemaking in this matter in June, and ACUTA was invited to recommend questions to be included in the NPRM. We will work with the Ad Hoc Telecommunications Users Committee to develop and submit questions to the FCC. In addition, we will keep our members informed of new developments.

Later the same week, Anthony Tanzi, Anthony Mordosky, and I participated in a workshop as part of the Federal Trade Commission's rulemaking proceeding on unauthorized charges (slamming, cramming, pay-per-call, etc.) This was an important two-day meeting to obtain input from users and industry on the FTC's proposed new rules that may extend the current pay-per-call regulations to all telephone-billed purchases. Anthony Tanzi sat on the panel that provided input to the FTC on these issues. In an article next month, I will summarize the workshop and the possible outcomes.

ACUTA members have told us repeatedly that monitoring and influencing regulatory issues is a high priority benefit of ACUTA membership. These meetings were a unique opportunity to represent the interests of a majority of ACUTA members on issues with potential financial implications for colleges and universities.





## D C at a Glance

Whitney L. Johnson

## Rights of Access to Buildings

The competitive local exchange carriers (CLECs) are working very hard to get federal legislation passed that would ensure nondiscriminatory, technology-neutral access to buildings that house potential customers. They are obviously interested in getting assurance that the owner of the building cannot prevent them from installing wire and other required equipment in order to service the potential customer.

Representatives from several organizations made presentations at a recent hearing before the House subcommittee on telecommunications, trade, and consumer protection. One speaker felt that the FCC "is unclear about its duty to act." Others noted that legislation is needed to give competitors fair and reasonable access to existing building wiring and cable. An FCC Bureau chief suggested that the subcommittee draft legislation to clarify the FCC's authority to "take action in the public interest to promote reasonable and nondiscriminatory access to multidwelling units." Rep. Tauzin, the subcommittee chairman, recognized that it would be very difficult to facilitate competition and at the same time protect the property rights of the building owners. (*Telecommunications Reports* 5/17)

The ACUTA Legislative and Regulatory Affairs Committee has this topic on their agenda. ACUTA members need to be sure that their administration is aware of the potential of having to open campus buildings to competitive vendors. It is unclear if such a law would apply to dormitories. It would be wise to get a legal opinion as to who might be allowed to provide telecom services within campus buildings.

## PICCs

Centrex customers may be paying more than necessary in PICC charges. About a year and a half ago the FCC was convinced to reduce the monthly PICC on Centrex (which uses lines, not trunks) to 30.55 cents per line, rather than the \$2.75/line charge that applies to multi-line businesses. The multi-line PICC cap is scheduled to increase to \$4.30 in July 1999, but a representative of the FCC indicated that most

LECs will not adjust the PICC charge up to the new cap.

*Telecom Manager's Voice Report* suggests another option: "Set your PIC to a smaller IXC. The telecom manager at one small east coast school points out that several IXCs have no PICC or minimum usage fees." (VR 5/10)

## Y2K

*Telecom & Data Network Security* (TDNS, April) notes that the FCC recently surveyed wireline carriers concerning the company status and preparation for Y2K. Almost half of the small and midsize wireline carriers surveyed reported no formal plan to manage the Y2K date change problem. On the other hand, the large LECs, providing 92% of the local service, and the large IXCs, who provide 82% of the total long distance service in the United States have completed the process of making the systems Y2K compliant.

According to *Voice Report* (5/10), older switches and routers are not ready for Y2K. Most pre-1997 products have been phased out and vendors are not even testing them. The FEMA guide to Y2K planning should be available at: [www.fema.gov/y2k/ccmp.htm](http://www.fema.gov/y2k/ccmp.htm).

## E-Rate

Schools and libraries have requested about \$2.4 billion for the second year of funding (TR 4/26). This is about double the amount requested in the first year. Several senators have written to FCC Chairman Kennard urging the FCC to see that the program is "fully funded at \$2.25 billion" for the year starting July 1. Three members of the Commission are in favor of full funding up to the \$2.25 billion cap (TR 5/10).

Mr. Kennard has suggested that "consumers shouldn't be affected by the funding increase ... because IXCs' increased contributions to the program would be more than offset by access charge reductions slated to take effect July 1."

Another bill to use the federal telecom excise tax to fund e-rate has been introduced similar to one that was entered last year and did not pass. During the second week in May, 33 senators signed a letter of support for "full funding" of the e-rate program up to

## President's Message

Continued from page 1

more significant developments in telecommunications in this century.

From its humble beginnings in the barracks, this technology has brought success to a company called VocalTec Communications, which pioneered the Internet telephony market with the introduction of Internet Phone® in 1995. For the first time, anyone who owned a multimedia PC could make or receive a call from a computer anywhere in the world with no long distance charges. Now an international company, its revenues are expected to grow to \$1.89 billion by the end of 2001. (For more information, visit their Web site at [www.vocaltec.com](http://www.vocaltec.com).)

What's more important than gift or privilege is persistence. Many great ideas die in the mind that bears them because of a lack of commitment.

We are all involved in technology on a daily basis—as users, planners, and managers. If you have an idea for something that will make your life easier, your work smarter, your staff more efficient, don't make the mistake of thinking others won't be interested.

ACUTA offers several venues for sharing information: the listserve, newsletter, journal, and presentations at seminars and conferences. Maybe you'll never win a Pulitzer Prize; maybe you'll never start an international, multi-billion-dollar company. But maybe Harper Lee, Tom Clancy, and those guys in the army barracks said the same thing—and tried anyway!

Stay in touch.

the cap. These senators may not be in favor of the use of the excise tax for e-rate funding. (TR 5/17)

## A Phone Hacker's Bill

Almost all ACUTA members have had fraudulent charges appear on the phone bill. At least one of the IXCs is not giving credit for unpaid bills—amounting to more than \$19,000—that were charged on a large city's bill by a hacker getting into the system. The IXC representative is quoted as saying "Regardless of how it happened, the city is liable. That is our legal position." If the IXC wins in this court case it may open the door for others to follow suit. (TDNS April)



# Update.....

## Positions Available

For complete details of these and other positions available, access the ACUTA Web site. If you do not have Internet access, call Pat Scott at the ACUTA office (606/278-3338) to receive a printout of current listings. Please submit position-available information electronically to Aaron Fuehrer at [afuehrer@acuta.org](mailto:afuehrer@acuta.org) or to ACUTA's homepage: <http://www.acuta.org>. If you post a position, please notify Aaron when the position is filled.

- **Telecommunications Technician, Yeshiva University**  
Contact: Human Resources Manager, Yeshiva University, 500 West 185th Street, New York, NY 10033 Fax: 212/960-0080
- **Asst Computing & Telecom Svcs Director, Central Washington Univ.**  
Contact: For details & application process, see [http://www.cwu.edu/~cts/cts\\_telecom\\_job.html](http://www.cwu.edu/~cts/cts_telecom_job.html) or call 509/963-3438. EO/AA/Title IX Inst.
- **Operations Manager, Duke University, Durham, NC**  
Contact: Paula Loendorf, Tele/Video Communications, Duke University, 129 TelCom Building, Box 90210, Durham, NC 27713. Applications accepted until position filled. EO/AA
- **Network Specialist I (2 positions available), Univ. of Maine**  
Contact: Leslie Shaw, Univ. of Maine, Information Technologies, Neville Hall, Orono, ME 04469-5752. EO/AA
- **Moves & Change (MAC) Coordinator, Rice Univ.**  
Contact: June James, Employment Coordinator, Rice University, 6100 Main Street, Houston, TX 77005. E-mail: [junej@rice.edu](mailto:junej@rice.edu)
- **Vice President for Information Technology, Western Kentucky Univ.**  
Contact: Office of the Provost; Attn: David Lee, Chair; Vice President for Information Technology Search; 239 Wetherby Administration Bldg., Western Kentucky Univ., 1 Big Red Way, Bowling Green, KY 42101-3576. Women & minorities are encouraged to apply. EO/AA
- **Director of Telecommunications, Univ. of North Carolina, Greensboro**  
Contact: Chair, Telecommunications Search Committee, Information Technology & Planning, UNC Greensboro, 307 Mossman Bldg, Greensboro, NC 27402-6170. Phone 336/334-5426. EEO/AA: W/M/V/D
- **Switch Technician, Ohio State University**  
Contact: Employment Services, The Ohio State University, 2231 North High Street, Columbus, OH 43201. EEO/AA: W/M/V/D
- **Telecom/Electronic Specialist I (Voice Mail System Administrator), Colorado State Univ.**  
Contact: Jose Valdes, Assoc. Director for Telecommunications, Colorado State Univ., Fort Collins, CO 80523-2028

## Welcome New Members

### Institutional Members

- Bethany Lutheran College, Mankato, MN. Mary Kelley, 507/344-7318. T1
- Delaware Valley Coll., Doylestown, PA. Jennifer Kratz, 215/489-2301. T1
- Georgia State Univ., Atlanta, GA. Ray Waters, 404/651-2000. T4
- Greenville Tech. Coll., Greenville, SC. Larry Appleton, 803/250-8000. T3
- Morningside College, Sioux City, IA. Linda Wideman, 712/274-5149. T1
- Univ. of Mary Hardin-Baylor, Belton, TX. Mike Frazier, 254/295-1526. T1

### Associate Member

- The Bolles School, Jacksonville, FL. John Bowling, 904/733-5952

### Corporate Affiliate Member

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## 28th Annual Conference & Exposition

July 18-22

Nashville, TN

Opryland Hotel

### Pre-Conference Seminars

- Campus Wireless Applications
- Intro to Telecom/Data Networking
- Telecom Auditing as a Tool to Lower Costs
- How to Implement a Disaster Plan on Your Campus

**Save \$\$**

when you register

by June 11

[www.acuta.org/html/nashville.html](http://www.acuta.org/html/nashville.html)